



CHEGUTU HIGH SCHOOL

LOWER 6th A1 TERM 2 201714th June 2017

Graphs and Coordinate Geometry

60 MARKS 2 HOURS ANSWER ALL QUESTIONS

PRESENT YOUR WORK NEATLY

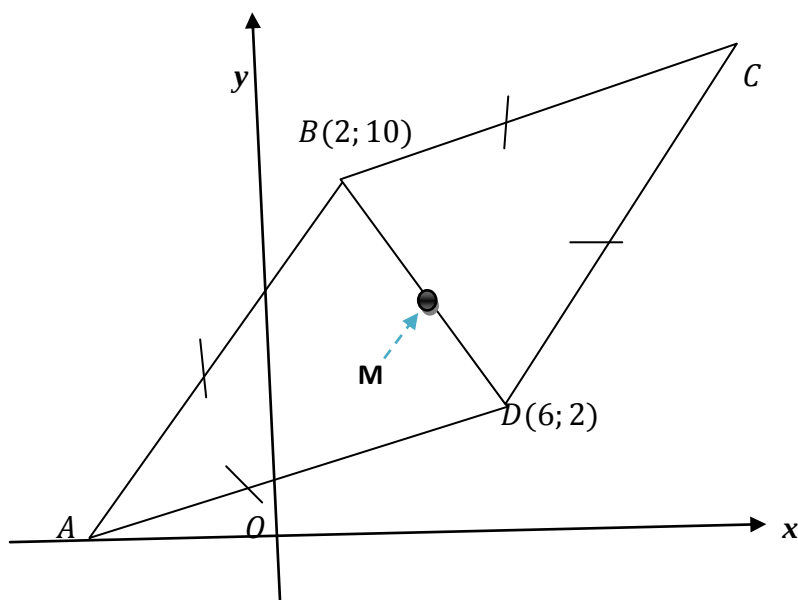


1. On the same axes, sketch the graphs of $y = |2x - 6|$ and $y = x$. [3]

Hence solve

- i. $|2x - 6| = x$ and [2]
 ii. $|2x - 6| > x$. [2]

2.

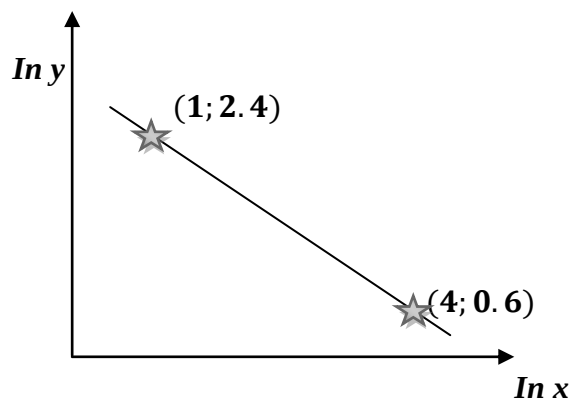


The diagram shows a rhombus $ABCD$. The points B and D have coordinates $(2, 10)$ and $(6, 2)$ respectively, and A lies on the x -axis. The mid-point of BD is M . Find, by calculation, the coordinates of each of M , A and C . [5]

3. The curve $y^2 = 12x$ intersects the line $3y = 4x + 6$ at two points.
 a) Find the distance between the two points. [4]
 b) Find the coordinates of the midpoint of these two points. [1]
4. Show that $(1, 2)$ lies on the circle $x^2 + y^2 - 6x + 2y - 3 = 0$, and find the equation of the gradient at that point. [5]

[Turn Over]

5.



Variable x and y are related by the equation:

$$y = Ax^n$$

Where A and n are constants. When a graph of $\ln y$ against $\ln x$ is drawn, the resulting line passes through the points $(1; 2.4)$ and $(4; 0.6)$, as shown in the diagram. Find the values of n and A . [5]

6. Sketch, separately, the graphs of $f(x) = (x - 1)(x + 2)(x + 4)$ and $f(x) = (2x - 1)(x + 2)$, showing the coordinates where the graph crosses the *axis*.
[No need to show the coordinates of the turning points] [3]

7. A circle passes through the points $(0, 2)$, $(0, 9)$ and $(3, 0)$. Find the equation of the circle and the length of its radius. [5]

8. Sketch on the same axes, the graphs of $y = |2x - 4|$ and $y = x + 1$. [3]
Hence, solve $|2x - 4| < x + 1$. [2]

9. The points A, B, C have coordinates $(-7, 3)$, $(2, 0)$, $(-3, 5)$, respectively. The line L passes through C and is perpendicular to AB .

(a) (i) Find the gradient of AB .

(ii) Show that the equation of AB is $x + 3y - 2 = 0$.

(iii) Find the equation of L . [7]

(b) The line L intersects AB at the point D . Show that the coordinates of D are $(-4, 2)$. [2]

(c) Show that L is not the perpendicular bisector of AB . [2]

(d) Find the value of $\tan \hat{ABC}$. Give your answer in its simplest form. [5]

Mark 4 vs. 35-40 ~ Tarakino N.P.